REMARKS

Claims 9-33 were pending in this application. With this Amendment, the applicant proposes to amend claims 9, 19, and 21. Accordingly, upon entry of this Amendment, claims 9-33 will remain as the pending claims.

Claims 9-20 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite. In particular, the Examiner noted that claims 9-20 recite "a lean burn engine comprising ..." and "An engine ..." in the preamble. This was deemed incomplete and non-functional, and the claims were deemed unclear as primarily directed to an emission control system. The applicant has amended claim 1 to recite that the lean burn engine "produces an exhaust gas comprising NOx, hydrocarbons, and carbon monoxide." Support for this amendment is found in the application at, for example, page 1, line 7-21, and such constituents of exhaust gases are well known to those skilled in the art. With this amendment, the applicant submits that the claim is complete, functional, and clearly recites an engine which includes an emission control system. Support for this reading of the term "engine" can be found at, for example, page 2, lines 15 and 16, which state "For use, the first catalyst system can be mounted ahead of the second catalyst system *in the exhaust apparatus of the engine*." In addition, claim 19 has been amended to delete the term "platinum" so that proper antecedent basis is provided for the phrase "the lean NOx catalyst." The applicant submits that antecedent basis for the term "engine" in claim 20 is found in the preamble claim 9 from which claim 20 depends.

Claims 9, 12-14, 16, 20, 21, 24-26, and 28 stand rejected under 35 U.S.C. § 102(b) as anticipated by Addiego et al. (EP 0 514 591 (the "'591 patent)). Claims 10, 11, 22, and 23 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the '591 patent. Claims 15 and 17 were rejected under Section 103(a) as unpatentable over the '591 patent in view of Voss et al. (U.S. Patent No. 5,491,120). Claims 17 and 31 stand rejected under Section 103(a) as unpatentable over the '591 patent in view of Chen et al. (U.S. Patent No. 5,451,388). Claims 18 and 32 stand rejected under Section 103(a) as unpatentable over the '591 patent in view of Vukui et al. (U.S. Patent No. 5,474,745). Claims 19 and 33 stand rejected under Section 103 (a) as

unpatentable over the '591 patent in view of Abe et al. (EP 0 661 089). Finally, claims 29 and 30 stand rejected under Section 103(a) as unpatentable over the '591 patent in view of Oliver (U.S. Patent No. 3,915,896). Accordingly, all of the prior art rejections rely on the '591 patent either alone or as the primary reference in combination with a secondary reference. The applicant submits that, with the amendments to independent claims 9 and 21, the present invention is patentable over the '591 patent.

The invention set forth by claims 9 and 21 is concerned with improving nitrogen oxide (NOx) conversion in an emission control system of a lean burn engine. The engine recited by claim 9 includes an emission system comprising a lean NOx catalyst comprising less than 30 g/ft^3 platinum for reducing NOx to N_2 and an oxidation catalyst, downstream of the lean NOx catalyst, comprising a platinum group metal (PGM) for oxidizing hydrocarbons and carbon monoxide. The process set forth by claim 21 is for controlling emissions from a lean-burn internal combustion engine and recites passing exhaust gases first over the lean NOx catalyst, then over the oxidation catalyst. Thus, the claimed invention captures not only the use of platinum as the choice for lean NOx catalysis of NO on the lean side, but doing so at a low loading of the platinum, and before the gas is exposed to a catalyst for oxidizing hydrocarbons and carbon monoxide.

Independent claims 9 and 21 have been amended to recite that the lean NOx catalyst PGM *consists of* platinum. Thus, as amended, the claimed invention calls for a lean NOx catalyst upstream of an oxidation catalyst, with the only platinum group metal of the lean NOx metal being platinum. Support for the amendments to claims 9 and 21 are found in the application at, for example, page 2, line 13.

The '591 patent is directed to a multi-stage catalytic system for converting NOx, hydrocarbons, and carbon monoxide to less harmful gases. The system includes first and second stages. The first stage is primarily for reducing NOx, while the second stage is primarily an oxidation stage for oxidizing carbon monoxide and hydrocarbons. Significantly, the '591 patent emphasizes that rhodium must be included in the first stage throughout its disclosure. See

abstract, page 2, lines 3-5, and page 3, lines 2, 3, and 44-46. Accordingly, in view of the amendments to claims 9 and 21, the applicant submits that the claimed invention is not anticipated by the '591 patent. Moreover, as the remaining claims are dependent on claims 9 and 21 and the rejections of those claims rely on the '591 patent either alone or as the primary reference, the applicant submits that these claims are allowable as well.

In view of the foregoing amendments and remarks, the applicant respectfully requests reconsideration and allowance of claims 9-33.

Respectfully submitted,

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CRL/lrb
Enclosure: Version with Markings to Show Changes Made

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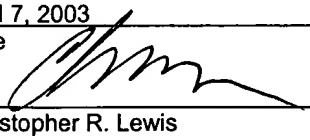

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

9. (Amended) A lean burn engine which produces an exhaust gas comprising NOx, hydrocarbons, and carbon monoxide, the engine comprising an emission control system for treating ~~an~~ the exhaust gas which flows upstream to downstream through the emission control system, which system comprising:

(a) a lean NOx catalyst comprising a lean NOx catalyst platinum group metal (PGM) for reducing NOx to N_2 wherein the lean NOx catalyst PGM consists of platinum; and

(b) an oxidation catalyst comprising ~~a~~ an oxidation catalyst platinum group metal (PGM) for oxidizing hydrocarbons and carbon monoxide,

wherein the lean NOx catalyst is disposed upstream of the oxidation catalyst and wherein the platinum is present in the lean NOx catalyst at a loading of $\leq 30 g/ft^3$.

19. (Amended) An engine according to claim 9, further comprising means for injecting hydrocarbon fuel into the exhaust upstream of the ~~platinum~~ lean NOx catalyst.

21. (Amended) A process for the control of emissions from a lean-burn internal combustion engine, which process comprising:

passing exhaust gases from the engine over a lean NOx catalyst comprising a lean NOx platinum group metal (PGM) to reduce NOx to N_2 wherein the lean NOx catalyst PGM consists of platinum; and

passing the product gases exiting from the lean NOx catalyst over an oxidation catalyst comprising ~~a~~ an oxidation catalyst platinum group metal (PGM) to oxidize hydrocarbons and carbon monoxide,

wherein the platinum is present in the lean NOx catalyst at a loading of $\leq 30 g/ft^3$.